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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,402	02/23/2004	Bonnie Gurry	HAT.PI300A	1825
23575 7590 10/04/2007 CURATOLO SIDOTI CO., LPA 24500 CENTER RIDGE ROAD, SUITE 280 CLEVELAND, OH 44145				
			EXAMINER NOGUEROLA, ALEXANDER STEPHAN	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 10/04/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<div style="border: 1px solid black; width: 200px; height: 20px; margin-bottom: 10px;"></div> <p style="text-align: center;"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/784,402	<b>Applicant(s)</b> GURRY ET AL.	
	<b>Examiner</b> ALEX NOGUEROLA	<b>Art Unit</b> 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)<br>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)<br>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/23/2004</u> . | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____<br>5) <input type="checkbox"/> Notice of Informal Patent Application<br>6) <input type="checkbox"/> Other: ____ |
|--|--|

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. US 4,571,292 ("Liu").

Addressing claim 1, Liu discloses an electrochemical microsensor device for measuring or regulating a chemical species comprising, a substrate (10) supporting an arrangement of at least two electrodes (Figure 3), wherein one of the electrodes is an anode (14) and one of the electrodes is a cathode (12), wherein the electrodes are formed using a thick film technique (col. 07:63-65), wherein the anode and cathode are disposed adjacent to each other (Figure 3).

Liu does not mention whether electrode 12 is an anode and electrode 14 is a cathode; however, it should be noted that this is just an intended use that does not otherwise structurally distinguish the electrodes. Although in one example electrode 12 functions as a cathode and electrode 14 functions as an anode (col. 05:53-60) this

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could easily be reversed by just reversing the polarity of the voltage applied to the electrodes. Claim 1, in fact, does allow for either electrode to be the anode and the other electrode to be the cathode; that is, "anode" and "cathode" are arbitrary designations.

Liu also does not mention having the anode adapted for oxidation of ions of the at least one of chlorine or bromine. However, this adaptation appears to be just a matter of selecting the appropriate voltage for the target species and so is not a structural distinction from the invention of Liu. See in Applicant's specification the first paragraph on page 6. It should be noted in this regard that Liu discloses a variable voltage source. See col. 08:59-68.

Addressing claims 2 and 3, for the additional limitations of these claims see col. 07:29-33.

Addressing claim 4, for the additional limitation of this claims see col. 08:01-24.

Addressing claim 5, for the additional limitation of this claims see col. 08:25-28.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. US 4,571,292 ("Liu") in view of Senda et al. US 5,397,451 ("Senda").

Liu discloses an electrochemical microsensor device for measuring or regulating a chemical species comprising, a substrate (10) supporting an arrangement of at least two electrodes (Figure 3), wherein one of the electrodes is an anode (14) and one of the electrodes is a cathode (12), wherein the electrodes are formed using a thick film

technique (col. 07:63-65), wherein the anode and cathode are disposed adjacent to each other (Figure 3).

Liu does not mention whether electrode 12 is an anode and electrode 14 is a cathode; however, it should be noted that this is just an intended use that does not otherwise structurally distinguish the electrodes. Although in one example electrode 12 functions as a cathode and electrode 14 functions as an anode (col. 05:53-60) this could easily be reversed by just reversing the polarity of the voltage applied to the electrodes. Claim 1, in fact, does allow for either electrode to be the anode and the other electrode to be the cathode; that is, "anode" and "cathode" are arbitrary designations.

Liu also does not mention having the anode adapted for oxidation of ions of the at least one of chlorine or bromine. However, this adaptation appears to be just a matter of selecting the appropriate voltage for the target species and so is not a structural distinction from the invention of Liu. See in Applicant's specification the first paragraph on page 6. It should be noted in this regard that Liu discloses a variable voltage source. See col. 08:59-68.

Although Liu also does disclose providing the electrodes with a connect portion (42,44) and a sensing portion, wherein the connect portion of the electrodes connects the electrodes to an electrical circuit (see Figure 3), Liu does not mention protecting the electrodes from the environment with an insulator, wherein the sensing portion of the electrodes is exposed to the environment.

Senda discloses an ion-selective sensor comprising a pair of electrodes (14, 13) formed by a thick film technique and covered by an insulator (15b) except for the sensing portion of the electrodes and a connect portion, which are exposed to the environment. See the abstract; Figures 2 and 3; and col. 02:61-64.

It would have been obvious to one with ordinary skill in the art at the time of the invention to provide an insulator as taught by Senda in the invention of Liu because this will prevent undesirable secondary electrochemical reactions from occurring along the leads from the sensing portion to the connect portion and will also prevent the electrodes from shorting out.

6. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. US 4,571,292 ("Liu") in view of Cagnini et al. ("Disposable ruthenized screen-printed biosensors for pesticides monitoring," *Sensors and Actuators B* 24-25 (1995) 85-89) ("Cagnini") and Wring et al. ("Chemically Modified, Screen-printed Carbon Electrodes, *Analyst*, august 1992, vol. 117, pp. 1281-1286) ("Wring").

Liu discloses an electrochemical microsensor device for measuring or regulating a chemical species comprising, a substrate (10) supporting an arrangement of at least two electrodes (Figure 3), wherein one of the electrodes is an anode (14) and one of the electrodes is a cathode (12), wherein the electrodes are formed using a thick film

technique (col. 07:63-65), wherein the anode and cathode are disposed adjacent to each other (Figure 3).

Liu does not mention whether electrode 12 is an anode and electrode 14 is a cathode; however, it should be noted that this is just an intended use that does not otherwise structurally distinguish the electrodes. Although in one example electrode 12 functions as a cathode and electrode 14 functions as an anode (col. 05:53-60) this could easily be reversed by just reversing the polarity of the voltage applied to the electrodes. Claim 1, in fact, does allow for either electrode to be the anode and the other electrode to be the cathode; that is, "anode" and "cathode" are arbitrary designations.

Liu also does not mention having the anode adapted for oxidation of ions of the at least one of chlorine or bromine. However, this adaptation appears to be just a matter of selecting the appropriate voltage for the target species and so is not a structural distinction from the invention of Liu. See in Applicant's specification the first paragraph on page 6. It should be noted in this regard that Liu discloses a variable voltage source. See col. 08:59-68.

Although Liu also does disclose that thick film techniques may be used to make the electrodes Liu does not mention particular techniques or describe in detail how the electrodes are made using a thick film technique. It should be first noted that the additional limitations of claim 7 are method-of-making steps, so they effectively convert claim 1 into a product-by-process claim. Thus, unless Applicant can show a material difference between the microsensor made by the steps of claim 7 and microsensor



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disclosed by Liu there is no patentable distinction provided by the additional limitations of claim 7.

Alternatively, Cagnini discloses that screen-printing electrodes for an electrochemical sensor, which Applicant acknowledges is a thick film technique (see pages 6-7 of the specification), involves the steps of claim 7. See in Cagnini the abstract and 2.3 *Printing of the electrodes* on page 86 (note that 'Screen-printing' and "controlled pattern" suggests, if not implies, use of a template as claimed, the screen being the template. See also the abstract Figures 2 and 3 in Wring). It would have been obvious to one with ordinary skill in the art to use a thick film as taught by Cagnini in the invention of Liu because as taught by Cagnini, "Screen printing is a simple and fast method for mass production of disposable electrochemical sensors. Single-use sensors have several advantages, such as avoidance of contamination between samples, constant sensitivity and high reproducibility of the different printed sensors." See 1.1 *Screen-printing technique*.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Alex Noguera", is written over the printed name.

Alex Noguera

Primary Examiner

AU 1753

September 19, 2007